PRELIMINARY DRAFT – DO NOT CITE OR QUOTE

EMFAC Modeling Change Technical Memo

SUBJECT: ON-ROAD EMISSIONS INVENTORY FUEL CORRECTION FACTORS

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SUMMARY

Fuel correction factors (FCF) are used in the on-road emission inventory model, EMFAC, to reflect the impact on emission of commercially dispensed fuel compared to fuel used during the certification process. Within the EMFAC model, the FCFs are calendar-year, model-year, and geographic-area specific multipliers applied to the basic emission rates. These factors are derived as the ratio of the impact of the dispensed fuel to the impact of the certification fuel.

Fuel Reid Vapor Pressure (RVP) primarily impacts evaporative emissions while the sulfur content of fuel impacts the estimated emissions of oxides of sulfur (SOx). Other properties of the fuel including aromatic hydrocarbon content, olefin content, and T50 and T90 distillation temperatures impact the exhaust emissions of other criteria pollutants including exhaust hydrocarbons (HC), carbon monoxide (CO), oxides of nitrogen (NOx), and particulate matter (PM).

Staff is suggesting the following modifications to the FCFs be included in the latest update of the on-road emissions inventory for both gasoline and diesel FCFs.

- Modify the fuel correction factors for Phase II reformulated gasoline (RFG) for the 1996 through 2003 calendar years to be cumulative to the Phase I (1992-1995 calendar year) values.
- Eliminate the emission benefit previously given for vehicles introduced after the availability of reformulated gasoline because these vehicles could certify on the reformulated gasoline.*
- Change the diesel fuel correction factors to 0.93 for NOx and 0.75 for PM as a result of the aromatics and sulfur change in 1994. This benefit is assumed regardless of fuel-injection type.
- Incorporate the new sulfur level for fuels. The sulfur change for 2007 was modeled as a 0.72 PM correction factor. This cumulative factor was not applied to new engines after 2007, which are assumed to certify on ultra low-sulfur diesel.
- Add a new fuel correction factor for exhaust hydrocarbon benefits for clean diesel fuel.
- Incorporate an out-of-state diesel fleet fueling rate of 10%, which changes the overall NOx fuel correction factor from 0.93 to 0.937.
- Apply exhaust fuel correction factors to idle emission rates for diesel fuel.

* Given the variety of certification options available to manufacturers, staff continues to investigate the appropriateness of the assumption that new vehicles should receive no benefit from fuel reformulation.

A summary of the statewide results is shown in Table 1 below. Taken together, these changes are estimated to increase the on-road motor vehicle emissions inventory by 3 tons per day (tpd) or 0.6% statewide for HC, 196 tpd or 4% for CO, 49 tpd or 5% for NOx, and decrease the statewide PM inventory by 1.4 tpd of PM (or 5%) in calendar year 2010.

Table 1
Statewide Emissions Changes due to revision

	2000	2005	2010	2015	2020		2000	2005	2010	2015	2020		2000	2005	2010	2015	2020
Statewide tons per day	Gasoline						Diesel						Total				
Reactive Organic Gas Emissions	1.2	7.8	9.5	8.6	7.1		-8.1	-7.8	-6.5	-5.3	-4.4		-6.9	0.0	3.0	3.3	2.7
Carbon Monoxide Emissions	61.0	168.4	196.2	175.7	144.8		0.0	0.0	0.0	0.0	0.0		61.0	168.4	196.2	175.7	144.8
Oxides of Nitrogen Emissions	14.2	21.2	21.9	18.6	15.0		33.9	35.2	27.0	15.4	8.2		48.1	56.4	48.9	34.0	23.2
Carbon Dioxide Emissions (000)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
PM10 Emissions	0.0	0.0	0.0	0.0	0.0		-1.1	-1.4	-1.4	-1.2	-1.1		-1.1	-1.4	-1.4	-1.2	-1.1

Detailed emissions inventory breakdowns showing the impacts by the type of modification and area are shown in Tables 16 through 21. The areas covered are statewide, Sacramento Valley, San Diego, San Francisco Bay Area, San Joaquin Valley, and the South Coast Air Basin. The years covered are 2000, 2005, 2010, 2015, and 2020.

NEED FOR REVISION

Sulfur / Lead

Table 2 presents the EMFAC2002 assumptions for sulfur and lead content of various fuels. The model was last updated in August of 2001 to reflect the measured properties of in-use fuels rather than the nominal standards reflected in previous versions of the models. Table 2 is divided into two geographic regions reflecting the early introduction of low sulfur diesel fuel into the South Coast Air Basin (SCAB) and Ventura County. The assumed sulfur content of the fuel impacts the oxides of sulfur (SOx) and particulate matter (PM) estimates in EMFAC. Lead is also directly reported by the model.

These measured properties were obtained through the Air Resources Board's motor vehicle fuels inspection program. In this program, inspectors obtain samples of commercially available gasoline and diesel fuel for laboratory analysis. Tests are performed to determine the aromatic content, sulfur level, RVP and other constituents of the dispensed fuels. No changes to these assumptions are anticipated in this update.

Table 2
EMFAC2002 Sulfur and Lead Content of Fuels

Cal Year	Fuel Sulfur Content (ppmw)						Lead (g/gal)
	SCAB & Ventura			All Other Areas			Statewide
	Leaded	Unleaded	Diesel	Leaded	Unleaded	Diesel	Leaded
Pre-72	610	380	2650	610	380	2650	2.080
1972	610	380	2650	610	380	2650	1.959
1973	610	380	2650	610	380	2650	1.904
1974	610	380	2650	610	380	2650	1.956
1975	610	380	2650	610	380	2650	1.843
1976-77	620	290	2340	620	290	2340	1.843
1978	350	190	3080	350	190	3080	1.843
1979	380	200	2850	380	200	2850	1.120
1980	330	210	2720	330	210	2720	0.831
1981	290	190	2800	290	190	2800	0.697
1982	310	210	2910	310	210	2910	0.783
1983	420	180	3150	420	180	3150	0.738
1984	360	250	3280	360	250	3280	0.660
1985	340	210	1050	340	210	3000	0.332
1986	400	220	950	400	220	3000	0.324
1987	400	220	850	400	220	3000	0.260
1988	400	220	500	400	220	3000	0.083
1989-90	400	220	500	400	220	3000	0.080
1991	151	151	500	151	151	3000	0.080
1992	151	151	500	151	151	3000	0
1993	151	151	500	151	151	500	0
1994	151	151	150	151	151	150	0
1995	151	151	130	151	151	140	0
1996-02	20	20	130	20	22	140	0
2003-06	15	15	130	15	15	140	0
2007+	15	15	15	15	15	15	0

Reformulated Gasoline

The current modeled benefits for reformulated gasoline are provided in Table 3. The following sections describe the general basis for the benefits and the proposed modifications. They are expressed as multiplicative correction factors that are applied to the basic exhaust emission rates.

All of the proposed modifications for on-road gasoline-powered engines are presented in Table 4, following the technical discussions.

Table 3

Current Fuel Correction Factors (FCF) for Cleaner-Burning Gasoline

		Summertime			Wintertime		
Cal Year	**Model Year**	**HC***	**CO**	**NOx**	**HC***	**CO**	**NOx**
Pre-92	All	1.000	1.000	1.0000	1.000	1.000	1.0000
1992-95	All	0.988	0.994	0.9970	0.963	0.895	0.9970
1996-03	All	0.860	0.890	0.8900	0.860	0.890	0.8900
2004+	All	0.860	0.890	0.8695	0.860	0.890	0.8695

* Exhaust only

RFG I (1992-1995 Calendar Years)

The assumed exhaust emission benefits of RFGI were based on the results of the auto/oil studies performed in the early 1990s and have remained unchanged since the introduction of EMFAC7F. General documentation for the changes are presented in the staff report for Phase I Reformulated Gasoline released in November 1990.

Evaporative emission benefits for RFGI were handled this way: Evaporative hydrocarbon emissions are a strong function of fuel volatility and it is the regional and seasonal variation in dispensed fuel RVP that generally dictates the magnitude of the evaporative emissions inventory. In EMFAC, the change in fuel from pre-CBG (pre cleaner burning gasoline) to RFG I to RFG II is modeled by RVP correction algorithms.

For RFGI, staff is proposing to change the fuel correction factors applicable to 1992 through 1995 vehicles to 1.0 to reflect the fact that these model year vehicles could certify on RFGI. Therefore, no benefit should be provided.

RFGII (1996-2003 Calendar Years)

An 11-percent reduction in carbon monoxide (CO) and oxides of nitrogen (NOx), and a 14-percent reduction in exhaust emissions of reactive organic gases (ROG) associated with RFGII is assumed for all vehicles, applicable to all processes (starts, running and idle) and all seasons. These percentages were based on an analysis of numerous motor vehicle emissions studies designed to evaluate fuel effects. General documentation is provided in the staff report on Phase II RFG released in October 1991. This estimate was incorporated into EMFAC2000.

There are two proposed changes to the fuel correction factors related to the introduction of RFGII. The first change applies to pre-1992 model year vehicles during the 1996 through 2003 calendar years. Although the benefits of RFGI and RFGII are meant to reflect a cumulative impact, EMFAC currently treats the impacts independently. This results in an underestimation of the cumulative benefits of both RFGI and RFGII of 1% for ROG and CO for pre-1992 vehicles for calendar years 1996 through 2003. These benefits will be adjusted accordingly in the next revision of the model.

Similar to RFGI, the staff is proposing to change the fuel correction factors applicable to 1996 through 2003 vehicles to 1.0 to reflect the fact that these model year vehicles could certify on RFGII. Therefore, no benefit should be provided.

RFGIII (2004+ Calendar Years)

The benefits of RFGIII are modeled to be the same as those of RFGII with the exception of NOx which is estimated to be 2.3% above and beyond the benefit of RFGII assumed in EMFAC2002 (FCF=0.8695). When this estimate was originally made in July of 2001, it was interpreted to include the impact of oxygenates (i.e., no federal waiver). In EMFAC, the impacts of ethanol and MTBE were assumed to be the same for exhaust. However, no adjustment was made for any presumed increase in evaporative emissions associated with the use of ethanol. In September of 2002, staff revised EMFAC2002 to reflect a delay in the implementation of RFGIII for one year from 2003 to 2004 per Executive Order D-52-02.

There are three proposed changes to the fuel correction factors related to the introduction of RFGIII. Similar to the changes for RFGII, the first proposed change applies to pre-1992 model year vehicles during the 2004+ calendar years and carries the cumulative benefits of RFGI, RFGII, and RFGIII. The second change applies to the 1992 through 1995 model year vehicles during the 2004 and later calendar years and reflects the cumulative benefits of RFGII and RFGIII. Similar to RFGI and RFGII, the staff is proposing to change the fuel correction factors applicable to 2004 and newer vehicles to reflect the fact that these model year vehicles could certify on RFGIII. Therefore, no benefit should be provided.

Ethanol

As stated earlier, gasoline containing ethanol has been commercially available in California for some time. Staff has estimated the impact of ethanol on evaporative process and intends to incorporate this new methodology in the EMFAC update. In general, the magnitude of the emissions increase is a strong function of ambient temperature used as a surrogate for the temperature of the fuel. Therefore, the estimation is region- and season-specific. This methodology is outlined in a separate memo entitled “Increased Evaporative Emissions Due To Ethanol Permeation.”

Table 4
Proposed Revisions to the Fuel Correction Factors For Cleaner Burning Gasoline

		Summertime			Wintertime		
Cal Year	**Model Year**	**HC**	**CO**	**NOx**	**HC**	**CO**	**NOx**
		Pre-Cleaner Burning Gasoline					
Pre-92	All	1.000	1.000	1.0000	1.000	1.000	1.0000
		RFG I					
1992-95	Pre-1992	0.988	0.994	0.9970	0.963	0.895	0.9970
1992-95	1992-1995	1.000	1.000	1.0000	0.963	0.895	0.9970
		RFG II					
1996-03	Pre-1992	0.850	0.884	0.8873	0.850	0.884	0.8873
1996-03	1992-1995	0.860	0.890	0.8900	0.860	0.890	0.8900
1996-03	1996+	1.000	1.000	1.0000	1.000	1.000	1.0000
		RFG III					
2004+	Pre-1992	0.850	0.884	0.8669	0.850	0.884	0.8669
2004+	1992-1995	0.860	0.890	0.8695	0.860	0.890	0.8695
2004+	1996-04	1.000	1.000	0.9770	1.000	1.000	0.9770
2004+	2004+	1.000	1.000	1.0000	1.000	1.000	1.0000

Diesel Fuel

Currently, diesel fuel benefits are modeled in three separate steps. The first step was to reflect the impact of lowering the sulfur content of diesel fuel to 500 ppm for the South Coast and Ventura County. The second step involved reducing the aromatic hydrocarbon content to 10% by volume and sulfur content to 500 parts per million by weight (ppmw) starting in 1994, on a statewide basis. The third, reflecting a reduction in sulfur to 15 ppmw, will be fully implemented beginning in 2007. The current modeled benefits for diesel fuel are provided in Table 5. (Note that the sulfur contents are provided in Table 2.)

The following sections describe the general basis for the benefits and the proposed modifications. They are expressed as multiplicative correction factors that are applied to the basic exhaust emission rates. All of the proposed modifications for the on-road diesel-powered engines are presented in Table 6, following the technical discussions.

Table 5
Current Clean Diesel Fuel Correction Factors

		SCAB & Ventura		Not SCAB & Ventura	
Cal Year	**Model Year**	**NOx**	**PM**	**NOx**	**PM**
Pre-1985	All	1.000	1.000	1.000	1.0000
1985-1993	Pre-1991	1.000	0.9610	1.000	1.0000
1994-2006	Pre-1991	0.944	0.7940	0.944	0.7940
2007+	Pre-1991	0.944	0.7622	0.944	0.7622
1985-1993	1991-1993	1.000	0.7730	1.000	1.0000
1994-2006	1991-1993	0.876	0.6720	0.876	0.6720
2007+	1991-1993	0.876	0.6451	0.876	0.6451
1994-2006	1994-2006	0.876	0.8990	0.876	0.8990
2007+	1994-2006	0.876	0.8630	0.876	0.8630
2007+	2007+	0.876	0.8990	0.876	0.8990

500 ppmw sulfur (1985–1993 Calendar Years)
10% aromatics/500 ppmw sulfur (1993–2006 Calendar Years)

The current benefits of the second phase of diesel reformulation assumed in the model were derived from an analysis of the CRC VE1 project. In this study, two engines, one representing mechanical fuel-injection and the other electronically injected engines, were tested. Because these engines were found to respond differently to changes in fuel properties, the impact of clean diesel was modeled in three stages (calendar years) for two geographic regions and two broad technology groups:

- Pre-1985 – Prior to diesel reformulation the FCF=1 for all vehicles.
- 1985 – Low sulfur diesel was introduced in the South Coast and Ventura.
- 1994 – Low sulfur and low aromatic fuels were required statewide.
  - A separate FCF is computed for mechanically injected (pre-1991) engines
  - A separate FCF is computed for electronically injected (post-1990) engines.

For this analysis, only benefits for NOx and PM were determined.

Based on a peer-reviewed analysis of more extensive vehicle testing, the staff is proposing that a single correction factor be used to reflect the benefits for the entire fleet (7% reduction for NOx and a 25% reduction for PM). The results of this subsequent test program reinforce the magnitude of their proposed benefit. The staff's analysis is generally documented in the report entitled "Staff Review of the Emission Benefits of California's Diesel Fuel Program" and is attached as Appendix D of the staff report entitled "Proposed Amendments to the California Diesel Fuel Regulations – Initial Statement of Reasons" dated June 6, 2003.

It has also been suggested that the 10% aromatic-hydrocarbon requirement for clean diesel has resulted in an increase in the cetane number of dispensed fuel. Analysis of the impact of higher cetane was conducted by the CRC in the VE-1 project and by the U.S. EPA in their HDEWG test program. The results of these test programs show an average exhaust hydrocarbon benefit of 28%. Therefore, the staff is proposing that a fuel correction factor of 0.72 be applied to all on-road diesel-powered vehicles beginning with the 1994 calendar year.

10% aromatic/15 ppmw sulfur (2007+ Calendar Years)

By 2007, 15 ppmw sulfur diesel fuel will be available statewide. The PM benefit for this secondary reduction in sulfur is assumed to be an additional 4%. This factor was taken from Appendix IV of the Fuels Report: Appendix to the Diesel Risk Reduction Plan, October 2000. Because federal diesel will be equivalent to that available in California with the exception of aromatic content, 2007 and newer vehicles are not assumed to benefit from the secondary sulfur reduction.

The majority of the 25% PM reduction discussed earlier is attributable to the aromatic content of the fuel rather than the reduction in sulfur. As a result, a 20% PM reduction is assumed for calendar years 2007+ and for model years 2007+ reflecting the lower aromatic content of California diesel fuel compared to federal certification fuel. As mentioned in the previous paragraph, lowering the sulfur content to 15 ppmw results in an additional 4% reduction in PM. This is reflected in the Pre-2007 model-year group for calendar years 2007+ (0.75*0.96 = 0.72).

Table 6
Proposed Revisions to the Fuel Correction Factors for Clean Diesel

		SCAB and Ventura			All Other Areas		
Cal Year	**Model Year**	**NOx**	**PM**	**HC**	**NOx**	**PM**	**HC**
Pre-1985	All	1.00	1.00	1.00	1.00	1.00	1.00
1985-1993	All	1.00	0.96	1.00	1.00	1.00	1.00
1994-2006	All	0.93	0.75	0.72	0.93	0.75	0.72
2007+	Pre-2007	0.93	0.72	0.72	0.93	0.72	0.72
2007+	2007+	0.93	0.80	0.72	0.93	0.80	0.72

Out-Of-State Diesel

Based on information gathered by the U.S. Department of Census through their Truck Inventory and Use Survey (TIUS), it is currently assumed that 25% of all heavy-heavy duty diesel trucks in use in California at any given time originate outside of the state. It is also assumed that these vehicles utilize clean diesel while in California and therefore benefit from its use.

An analysis of International Fuel Tax Agreement (IFTA) data suggests that between 24% and 26% of interstate trucks operating in California, dependent upon the price of diesel fuel, utilize non-California diesel while in the state. This led to estimates of up to 25% of the diesel fuel consumed in the State being federal diesel on the upper bound (all the out-of-state trucks using only out-of-state fuel in California) and as low as 6% federal diesel usage (25% of the 25% out-of-state trucks).

For the year 2000, Board of Equalization records for diesel sales in California were about 8% lower than EMFAC estimates of diesel fuel used suggesting that 8% of the fuel consumed in the State came from outside the State.

Given the uncertainty in this estimate, staff proposes to reflect the impact of non-California diesel fuel use in the update of the model by assuming that 10% of all diesel fuel used by heavy-heavy duty diesel trucks is federal diesel.

Correction to Idle Emission Rates

In previous versions of EMFAC, the benefits of fuel reformulation for diesel fuel were taken only for the exhaust emissions process. Staff is suggesting that those benefits assumed for exhaust also be applied to idle emissions.

The effects of this change on the statewide and sub-area emission inventories can be seen in the tables in the Inventory Effects section below.

AFFECTED SOURCE CODE/VERSION

FCF_DATA.for (8/17/2001).

METHODOLOGY FOR REVISION

The affected lines of FCF_DATA.for are shown in Attachment A.

Gasoline

The tech groups corresponding to the various model year groupings are shown in Table 7. The old and new fuel correction factors are listed below in Table 8.

Table 7
Gasoline Model year Tech Group Bins

91- MY	Tech Groups 1-16, 46-49, 76-79, 106-109, 136-140, 228-231, 260-265
92-95 MY	Tech Groups 17, 18, 21, 50, 80, 110, 141, 232
96-03 MY	Tech Groups 19-20, 22-24, 26-27, 51-53, 81-83, 111, 142, 233, 266-269
04+ MY	Tech Groups 28-31, 37, 54-57, 84-87, 112-114, 143-144, 234-237, 270-277

Table 8
Gasoline Fuel Correction Factors

	Revised Fuel Correction Factors				Existing Fuel Correction Factors			
	Calendar Year				Calendar Year			
	91-	92	96	04	91-	92	96	04
Model year								
91- Summer HC	1.000	0.988	0.850	0.850	1.000	0.988	0.860	0.860
91- Summer CO	1.000	0.994	0.884	0.884	1.000	0.994	0.890	0.890
91- Summer NOx	1.000	0.997	0.8873	0.8669	1.000	0.997	0.890	0.8695
91- Winter HC	1.000	0.963	0.850	0.850	1.000	0.963	0.860	0.860
91- Winter CO	1.000	0.895	0.884	0.884	1.000	0.895	0.890	0.890
91- Winter NOx	1.000	0.997	0.8873	0.8669	1.000	0.997	0.890	0.8695
92-95 Summer HC		1.000	0.860	0.860		0.988	0.860	0.860
92-95 Summer CO		1.000	0.890	0.890		0.994	0.890	0.890
92-95 Summer NOx		1.000	0.890	0.8695		0.997	0.890	0.8695
92-95 Winter HC		0.963	0.860	0.860		0.963	0.860	0.860
92-95 Winter CO		0.895	0.890	0.890		0.895	0.890	0.890
92-95 Winter NOx		0.997	0.890	0.8695		0.997	0.890	0.8695
96-04 Summer HC			1.000	1.000			0.860	0.860
96-04 Summer CO			1.000	1.000			0.890	0.890
96-04 Summer NOx			1.000	0.977			0.890	0.8695
96-04 Winter HC			1.000	1.000			0.860	0.860
96-04 Winter CO			1.000	1.000			0.890	0.890
96-04 Winter NOx			1.000	0.977			0.890	0.8695
04+ Summer HC				1.000				0.860
04+ Summer CO				1.000				0.890
04+ Summer NOx				1.000				0.8695
04+ Winter HC				1.000				0.860
04+ Winter CO				1.000				0.890
04+ Winter NOx				1.000				0.8695

Diesel

The diesel model-year groupings are shown in Table 9 below. This revision substantially lowers the effect of model year.

Table 9
Diesel Tech Group Model Year Bins

93- MY	Tech Groups 60-66, 90-96, 120-126, 170-176, 178-183, 186-192, 216-218, 240-246
93- HHD	Tech Groups 150-156, 200-205
94-06 MYs	Tech Groups 67-70, 97-100, 127-130, 177, 184, 185, 193, 194, 219-223, 247-250
94-06 HHD	Tech Groups 157-160, 206-209
07+ MY	Tech Groups 71, 101, 131, 224, 225, 251
07+ HHD	Tech Groups 161, 210, 211

The revised diesel fuel correction factors are shown in Table 10. These are the result of statistical analysis of several studies.

Table 10
Diesel Fuel Correction Factors

	Revised Fuel Corr Facts				Existing Fuel Corr Facts			
	Calendar Year				Calendar Year			
	84-	85	94	07+	84-	85	94	07+
Model Year		-93	-06			-93	-06	
90- Cal NOx	1.00	1.00	0.93	0.93	1.00	1.00	0.944	0.944
90- Cal PM	1.00	1.00	0.75	0.72	1.00	1.00	0.794	0.7622
90- SCAB NOx	1.00	1.00	0.93	0.93	1.00	1.00	0.944	0.944
90- SCAB PM	1.00	0.961	0.75	0.72	1.00	0.961	0.794	0.7622
91-93 Cal NOx		1.00	0.93	0.93		1.00	0.876	0.876
91-93 Cal PM		1.00	0.75	0.72		1.00	0.672	0.6541
91-93 SCAB NOx		1.00	0.93	0.93		1.00	0.876	0.876
91-93 SCAB PM		0.96	0.75	0.72		0.773	0.672	0.6541
94-06 Cal NOx			0.93	0.93			0.876	0.876
94-06 Cal PM			0.75	0.72			0.899	0.863
94-06 SCAB NOx			0.93	0.93			0.876	0.876
94-06 SCAB PM			0.75	0.72			0.899	0.863
07+ Cal NOx				0.93				0.876
07+ Cal PM				0.80				0.899
07+ SCAB NOx				0.93				0.876
07+ SCAB PM				0.80				0.899

Out-of-State Fueling

A survey of truckers performed by Caltrans indicated that about 10% of the diesel fuel usage in the State was federal out-of-state fuel. To model this, the fuel correction factors for engines on EPA fuel were weighted with the fuel correction factors for engines on California fuel. Table 11 shows the derivation of the combinations.

This correction is only applied to heavy heavy-duty diesel trucks.

Table 11
Correction for Out-Of-State Fueling

	EPA (10%)		CA (90%)		Weighted
	Correction Factor	Note	Corr Fact	Note	Corr Fact
NOx	1.0		0.93	Aromatics	0.937
PM (SCAB 500)	1.0		0.96	(0.04 S)	0.964
PM (500 ppm S)	0.96	(0.04 S)	0.75	(0.04 S + 0.2 Arom)	0.771
PM (15 ppm S)	0.92	(0.04 + 0.04 S)	0.72	(0.04+0.04 S + 0.2 Arom)	0.740
PM 07+	1.0		0.80	(0.2 Arom)	0.820
HC 94+	1.0		0.72	Cetane	0.748

Table 12 below shows the resulting corrected diesel fuel correction factors.

Diesel Hydrocarbon Reductions

Analysis of the Diesel Fuel Properties-Emissions studies (for NOx and PM) also indicated an exhaust hydrocarbon benefit for low-aromatic or high-cetane diesel fuel. Previously there were only PM and NOx correction factors for diesel. This change entailed adding a new pollutant category to each of the tech groups (see Table 13).

Table 13
Diesel Fuel Hydrocarbon Fuel Correction Factors

	Fuel Correction Factors			
	Calendar Year			
	84-	85	94	07+
Model Year		-93	-06	
93- HC	1.00	1.00	0.72	0.72
93- HHD HC	1.00	1.00	0.748	0.748
94+ HC			0.72	0.72
94+ HHD HC			0.748	0.748

Table 12
Diesel Fuel Correction Factors Corrected for Out-of-State Fueling

	Revised Fuel Correction Factors				Existing Fuel Correction Factors			
	Calendar Year				Calendar Year			
	84-	85	94	07+	84-	85	94	07+
Model Year		-93	-06			-93	-06	
90- Cal NOx	1.00	1.00	0.93	0.93	1.00	1.00	0.944	0.944
90- Cal PM	1.00	1.00	0.75	0.72	1.00	1.00	0.794	0.7622
90- SCAB NOx	1.00	1.00	0.93	0.93	1.00	1.00	0.944	0.944
90- SCAB PM	1.00	0.96	0.75	0.72	1.00	0.961	0.794	0.7622
91-93 Cal NOx		1.00	0.93	0.93		1.00	0.876	0.876
91-93 Cal PM		1.00	0.75	0.72		1.00	0.672	0.6541
91-93 SCAB NOx		1.00	0.93	0.93		1.00	0.876	0.876
91-93 SCAB PM		0.96	0.75	0.72		0.773	0.672	0.6541
94-06 Cal NOx			0.93	0.93			0.876	0.876
94-06 Cal PM			0.75	0.72			0.899	0.863
94-06 SCAB NOx			0.93	0.93			0.876	0.876
94-06 SCAB PM			0.75	0.72			0.899	0.863
06- Cal HHD NOx	1.00	1.00	0.94	0.94				
06- Cal HHD PM	1.00	1.00	0.77	0.74				
06- SCAB HHD PM	1.00	0.96	0.77	0.74				
07+ Cal NOx				0.93				0.876
07+ Cal PM				0.80				0.899
07+ SCAB NOx				0.93				0.876
07+ SCAB PM				0.80				0.899
07+ Cal HHD NOx				0.94				
07+ Cal HHD PM				0.82				

Diesel Idle Emission Rate Reductions

Table 14
Diesel Fuel Correction Factors for Idle Mode

	Fuel Correction Factors			
	Calendar Year			
	84-	85	94	07+
Model Year		-93	-06	
93- Cal HC	1.00	1.00	0.72	0.72
93- Cal NOx	1.00	1.00	0.93	0.93
93- Cal PM	1.00	1.00	0.75	0.72
93- SCAB PM	1.00	0.96	0.75	0.72
93- SCAB HHD PM	1.00	0.96	0.77	0.74
94-06 Cal HC			0.72	0.72
94-06 Cal NOx			0.93	0.93
94-06 Cal PM			0.75	0.72
94-06 Cal HHD HC			0.75	0.75
94-06 Cal HHD NOx			0.94	0.94
94-06 Cal HHD PM			0.77	0.74
07+ Cal HC				0.72
07+ Cal NOx				0.93
07+ Cal PM				0.80
07+ Cal HHD HC				0.75
07+ Cal HHD NOx				0.94
07+ Cal HHD PM				0.82

INVENTORY EFFECTS

Table 15 shows a summary of the emission inventory effects due to this programming change for the state as a whole.

Tables 16A through 21B show the inventory calculations for the baseline EMFAC version (April 23, 2002) and for a program-version containing the above fuel-correction factor changes. The results are shown separately for the gasoline-fueled fleet and the diesel-fueled fleet. Scenario years of 2000, 2005, 2010, 2015, and 2020 are shown. The areas shown are Statewide overall, Sacramento Valley Air Basin, San Diego County, San Francisco Bay Air Basin, San Joaquin Valley Air Basin, and South Coast Air Basin.

The proposed programming changes resulted in a slight rise in the ROG emissions from the gasoline cars. The decrease of ROG emissions due to the newly applied diesel fuel correction factors for HC or ROG resulted in a similar reduction. The net change in ROG statewide is about 3 tpd increase, about 0.6% for 2010.

The carbon monoxide emissions estimate for the gasoline fleet was increased by the proposed changes in fuel correction factors. The estimated increase for the year 2010 statewide is 196 tpd or 4%.

The proposed fuel correction factor changes resulted in increases in the NOx emission estimates for both the gasoline and diesel fleets. For the year 2010 the gasoline emissions estimate was increased by 22 tpd, the diesel fleet emissions estimate was increased by 27 tpd. The overall statewide increase was 49 tpd or 5%.

The proposed fuel correction factor changes resulted in a decrease of the PM emissions estimate, due all to the diesel fleet. The estimated decrease is 1.4 tpd for the year 2010 statewide or 5% overall.

Table 15
Statewide Emissions Changes due to revision

	2000	2005	2010	2015	2020		2000	2005	2010	2015	2020		2000	2005	2010	2015	2020
Statewide tons per day	Gasoline						Diesel						Total				
Reactive Organic Gas Emissions	1.2	7.8	9.5	8.6	7.1		-8.1	-7.8	-6.5	-5.3	-4.4		-6.9	0.0	3.0	3.3	2.7
Carbon Monoxide Emissions	61.0	168.4	196.2	175.7	144.8		0.0	0.0	0.0	0.0	0.0		61.0	168.4	196.2	175.7	144.8
Oxides of Nitrogen Emissions	14.2	21.2	21.9	18.6	15.0		33.9	35.2	27.0	15.4	8.2		48.1	56.4	48.9	34.0	23.2
Carbon Dioxide Emissions (000)	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0
PM10 Emissions	0.0	0.0	0.0	0.0	0.0		-1.1	-1.4	-1.4	-1.2	-1.1		-1.1	-1.4	-1.4	-1.2	-1.1

Table 16A
Statewide Gasoline Inventory Effects

	Baseline					Modified					Difference, modified minus baseline				
Tons per day	2000	2005	2010	2015	2020	2000	2005	2010	2015	2020	2000	2005	2010	2015	2020
Vehicles	21,488,986	23,894,357	26,464,123	28,834,344	31,267,032	21,488,986	23,894,357	26,464,123	28,834,344	31,267,032	0	0	0	0	0
VMT/1000	746,974	818,658	900,023	972,438	1,046,207	746,974	818,658	900,023	972,438	1,046,207	0	0	0	0	0
Trips	140,479,986	154,551,045	169,751,386	183,437,138	197,314,659	140,479,986	154,551,045	169,751,385	183,437,138	197,314,659	0	0	-1	0	0
Reactive Organic Gas Emissions															
Run Exh	369.8	208.3	130.7	84.6	58.1	369.2	211.5	135.1	88.8	61.9	-0.6	3.2	4.4	4.2	3.8
Idle Exh	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0
Start Ex	214.8	149.3	102.6	67.8	45.4	216.5	153.8	107.7	72.2	48.7	1.8	4.5	5.1	4.4	3.3
Total Ex	585.1	358.1	233.8	152.8	104.0	586.3	365.8	243.3	161.4	111.1	1.2	7.7	9.5	8.6	7.1
Diurnal	51.5	44.1	36.9	30.7	26.6	51.5	44.1	36.9	30.7	26.6	0.0	0.0	0.0	0.0	0.0
Hot Soak	50.2	35.9	29.1	24.8	21.7	50.2	35.9	29.1	24.8	21.7	0.0	0.0	0.0	0.0	0.0
Running	271.8	191.7	148.2	119.9	103.9	271.8	191.7	148.2	119.9	103.9	0.0	0.0	0.0	0.0	0.0
Resting	29.6	24.4	22.1	21.0	19.7	29.6	24.4	22.1	21.0	19.7	0.0	0.0	0.0	0.0	0.0
Total	988.3	654.1	470.1	349.3	275.8	989.5	661.9	479.6	357.9	283.0	1.2	7.8	9.5	8.6	7.1
Carbon Monoxide Emissions															
Run Exh	8,074.0	5,150.0	3,571.2	2,469.7	1,766.9	8,119.5	5,280.1	3,721.0	2,603.7	1,878.5	45.4	130.1	149.9	134.1	111.7
Idle Exh	3.0	2.9	2.9	2.8	2.9	3.0	2.9	2.9	2.8	2.9	0.0	0.0	0.0	0.0	0.0
Start Ex	2,173.0	1,506.4	1,092.0	765.5	539.9	2,188.6	1,544.7	1,138.4	807.2	573.0	15.6	38.3	46.3	41.7	33.1
Total Ex	10,250.1	6,659.4	4,666.1	3,238.0	2,309.6	10,311.1	6,827.7	4,862.2	3,413.7	2,454.4	61.0	168.4	196.2	175.7	144.8
Oxides of Nitrogen Emissions															
Run Exh	859.7	515.5	340.7	227.0	161.6	870.6	530.8	355.8	239.6	171.6	10.8	15.4	15.1	12.5	10.0
Idle Exh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Start Ex	141.2	118.5	99.4	75.8	57.1	144.5	124.3	106.2	81.9	62.1	3.3	5.8	6.8	6.1	5.0
Total Ex	1,000.9	634.0	440.1	302.9	218.7	1,015.1	655.1	462.0	321.5	233.8	14.2	21.2	21.9	18.6	15.0
Carbon Dioxide Emissions (000)															
Run Exh	365.8	395.1	438.5	477.1	511.5	365.8	395.1	438.5	477.1	511.5	0.0	0.0	0.0	0.0	0.0
Idle Exh	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Start Ex	13.6	14.2	15.1	16.1	17.1	13.6	14.2	15.1	16.1	17.1	0.0	0.0	0.0	0.0	0.0
Total Ex	379.5	409.4	453.7	493.2	528.7	379.5	409.4	453.7	493.2	528.7	0.0	0.0	0.0	0.0	0.0
PM10 Emissions															
Run Exh	10.3	12.1	14.4	16.5	18.1	10.3	12.1	14.4	16.5	18.1	0.0	0.0	0.0	0.0	0.0
Idle Exh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Start Ex	1.2	1.4	1.6	1.7	1.8	1.2	1.4	1.6	1.7	1.8	0.0	0.0	0.0	0.0	0.0
Total Ex	11.4	13.5	16.0	18.2	19.9	11.4	13.5	16.0	18.2	19.9	0.0	0.0	0.0	0.0	0.0
TireWear	6.7	7.3	8.0	8.6	9.3	6.7	7.3	8.0	8.6	9.3	0.0	0.0	0.0	0.0	0.0
BrakeWr	10.3	11.3	12.4	13.5	14.5	10.3	11.3	12.4	13.5	14.5	0.0	0.0	0.0	0.0	0.0
Total	28.4	32.1	36.4	40.3	43.7	28.4	32.1	36.4	40.3	43.7	0.0	0.0	0.0	0.0	0.0
Lead	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SOx	5.4	4.0	4.4	4.8	5.1	5.4	4.0	4.4	4.8	5.1	0.0	0.0	0.0	0.0	0.0
Fuel Consumption (000 gallons)															
Gasoline	40,710.1	43,106.6	47,280.7	51,070.4	54,531.8	40,720.6	43,136.7	47,315.8	51,101.9	54,557.8	10.5	30.1	35.1	31.5	26.0
Diesel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 16B
Statewide Diesel Inventory Effects

	Baseline Diesel					Modified Diesel					Difference, modified minus baseline Diesel				
	2000	2005	2010	2015	2020	2000	2005	2010	2015	2020	2000	2005	2010	2015	2020
Statewide tons per day															
Vehicles	679,400	746,294	742,862	742,157	751,959	679,400	746,294	742,862	742,157	751,959	0	0	0	0	0
VMT/1000	46,726	51,799	54,849	57,891	60,589	46,726	51,799	54,849	57,891	60,589	0	0	0	0	0
Trips	7,533,582	8,587,262	8,996,461	9,329,049	9,713,464	7,533,582	8,587,263	8,996,461	9,329,049	9,713,464	0	1	0	0	0
Reactive Organic Gas Emissions															
Run Exh	29.5	28.0	23.2	18.1	14.7	21.8	20.7	17.1	13.3	10.9	-7.7	-7.3	-6.1	-4.7	-3.9
Idle Exh	1.4	1.6	1.8	2.0	2.2	1.1	1.2	1.4	1.5	1.6	-0.4	-0.4	-0.5	-0.5	-0.5
Start Ex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Ex	30.9	29.7	25.0	20.1	16.9	22.9	21.9	18.5	14.8	12.5	-8.1	-7.8	-6.5	-5.3	-4.4
Diurnal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hot Soak	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Running	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Resting	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	30.9	29.7	25.0	20.1	16.9	22.9	21.9	18.5	14.8	12.5	-8.1	-7.8	-6.5	-5.3	-4.4
Carbon Monoxide Emissions															
Run Exh	136.4	124.5	106.5	89.9	81.3	136.4	124.5	106.5	89.9	81.3	0.0	0.0	0.0	0.0	0.0
Idle Exh	8.5	9.7	10.9	11.9	12.9	8.5	9.7	10.9	11.9	12.9	0.0	0.0	0.0	0.0	0.0
Start Ex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Ex	144.9	134.2	117.4	101.9	94.2	144.9	134.2	117.4	101.9	94.2	0.0	0.0	0.0	0.0	0.0
Oxides of Nitrogen Emissions															
Run Exh	742.4	676.9	514.5	324.4	209.0	778.0	714.1	543.6	342.1	219.8	35.5	37.1	29.1	17.7	10.7
Idle Exh	26.1	29.9	33.4	36.5	39.5	24.5	28.0	31.3	34.2	37.0	-1.6	-1.9	-2.1	-2.3	-2.5
Start Ex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Ex	768.5	706.8	547.9	360.9	248.6	802.4	742.0	574.8	376.3	256.8	33.9	35.2	27.0	15.4	8.2
Carbon Dioxide Emissions (000)															
Run Exh	82.5	92.5	104.5	115.1	123.3	82.5	92.5	104.5	115.1	123.3	0.0	0.0	0.0	0.0	0.0
Idle Exh	1.3	1.5	1.7	1.9	2.0	1.3	1.5	1.7	1.9	2.0	0.0	0.0	0.0	0.0	0.0
Start Ex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Ex	83.9	94.0	106.1	116.9	125.4	83.9	94.0	106.1	116.9	125.4	0.0	0.0	0.0	0.0	0.0
PM10 Emissions															
Run Exh	17.0	14.4	11.1	8.3	6.7	16.1	13.2	9.9	7.3	5.7	-0.9	-1.3	-1.2	-1.1	-1.0
Idle Exh	0.8	0.7	0.6	0.6	0.5	0.7	0.6	0.5	0.4	0.4	-0.2	-0.2	-0.2	-0.1	-0.1
Start Ex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Ex	17.8	15.1	11.7	8.9	7.2	16.7	13.7	10.3	7.7	6.2	-1.1	-1.4	-1.4	-1.2	-1.1
TireWear	1.2	1.3	1.5	1.7	1.8	1.2	1.3	1.5	1.7	1.8	0.0	0.0	0.0	0.0	0.0
BrakeWr	0.6	0.7	0.8	0.8	0.8	0.6	0.7	0.8	0.8	0.8	0.0	0.0	0.0	0.0	0.0
Total	19.6	17.2	13.9	11.3	9.9	18.6	15.8	12.6	10.1	8.8	-1.1	-1.4	-1.4	-1.2	-1.1
Lead	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SOx	7.3	8.2	1.0	1.1	1.2	7.3	8.2	1.0	1.1	1.2	0.0	0.0	0.0	0.0	0.0
Fuel Consumption (000 gallons)															
Gasoline	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diesel	7,547.9	8,462.7	9,552.6	10,523.5	11,280.1	7,547.9	8,462.7	9,552.6	10,523.5	11,280.1	0.0	0.0	0.0	0.0	0.0

Table 17A
Sacramento Valley AB Gasoline Inventory Effects

Tons per day	Baseline Gasoline 2000	2005	2010	2015	2020	Modified Gasoline 2000	2005	2010	2015	2020	Difference, modified minus baseline Gasoline 2000	2005	2010	2015	2020
Sacramento Valley AB															
Vehicles	1,561,864	1,828,104	2,071,313	2,328,533	2,566,443	1,561,864	1,828,104	2,071,323	2,328,533	2,566,443	0	0	10	0	0
VMT/1000	49,939	57,807	65,618	73,397	79,579	49,939	57,807	65,618	73,397	79,579	0	0	0	0	0
Trips	10,319,748	11,845,761	13,251,572	14,721,017	16,010,688	10,319,748	11,845,761	13,251,572	14,721,017	16,010,688	0	0	0	0	0
Reactive Organic Gas Emissions															
Run Exh	25.3	14.8	9.0	5.5	3.7	25.3	15.0	9.3	5.8	3.9	0.0	0.2	0.3	0.3	0.3
Idle Exh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Start Ex	16.9	12.0	8.1	5.2	3.4	17.0	12.3	8.4	5.5	3.6	0.1	0.3	0.4	0.3	0.2
Total Ex	42.3	26.8	17.1	10.7	7.1	42.3	27.3	17.7	11.3	7.6	0.0	0.5	0.6	0.6	0.5
Diurnal	5.3	4.8	4.0	3.3	2.8	5.3	4.8	4.0	3.3	2.8	0.0	0.0	0.0	0.0	0.0
Hot Soak	5.0	3.8	3.1	2.7	2.3	5.0	3.8	3.1	2.7	2.3	0.0	0.0	0.0	0.0	0.0
Running	22.6	16.9	12.9	10.3	8.8	22.6	16.9	12.9	10.3	8.8	0.0	0.0	0.0	0.0	0.0
Resting	2.6	2.2	2.0	1.8	1.7	2.6	2.2	2.0	1.8	1.7	0.0	0.0	0.0	0.0	0.0
Total	77.8	54.5	39.1	28.8	22.7	77.9	55.0	39.8	29.4	23.2	0.1	0.5	0.6	0.6	0.5
Carbon Monoxide Emissions															
Run Exh	585.8	384.0	259.9	174.5	123.5	588.9	393.3	270.4	183.7	131.4	3.1	9.2	10.5	9.3	7.9
Idle Exh	0.3	0.3	0.3	0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.0	0.0	0.0	0.0	0.0
Start Ex	173.3	122.1	86.2	58.6	39.9	174.2	124.7	89.4	61.5	42.3	0.9	2.6	3.2	2.9	2.4
Total Ex	759.4	506.4	346.4	233.3	163.7	763.4	518.3	360.1	245.4	173.9	3.9	11.8	13.7	12.2	10.3
Oxides of Nitrogen Emissions															
Run Exh	58.4	36.2	23.5	15.3	10.8	59.1	37.3	24.5	16.2	11.5	0.7	1.1	1.0	0.8	0.7
Idle Exh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Start Ex	10.6	9.2	7.5	5.7	4.2	10.9	9.6	8.1	6.1	4.5	0.2	0.4	0.5	0.5	0.4
Total Ex	69.1	45.4	31.0	21.0	15.0	70.0	46.9	32.5	22.3	16.1	1.0	1.5	1.5	1.3	1.1
Carbon Dioxide Emissions (000)															
Run Exh	24.8	28.4	32.2	35.9	39.1	24.8	28.4	32.2	35.9	39.1	0.0	0.0	0.0	0.0	0.0
Idle Exh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Start Ex	1.0	1.1	1.2	1.3	1.4	1.0	1.1	1.2	1.3	1.4	0.0	0.0	0.0	0.0	0.0
Total Ex	25.8	29.5	33.4	37.2	40.5	25.8	29.5	33.4	37.2	40.5	0.0	0.0	0.0	0.0	0.0
PM10 Emissions															
Run Exh	0.6	0.7	0.9	1.0	1.1	0.6	0.7	0.9	1.0	1.1	0.0	0.0	0.0	0.0	0.0
Idle Exh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Start Ex	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Total Ex	0.7	0.9	1.0	1.1	1.3	0.7	0.9	1.0	1.1	1.3	0.0	0.0	0.0	0.0	0.0
TireWear	0.4	0.5	0.6	0.6	0.7	0.4	0.5	0.6	0.6	0.7	0.0	0.0	0.0	0.0	0.0
BrakeWr	0.7	0.8	0.9	1.0	1.1	0.7	0.8	0.9	1.0	1.1	0.0	0.0	0.0	0.0	0.0
Total	1.9	2.2	2.5	2.8	3.1	1.9	2.2	2.5	2.8	3.1	0.0	0.0	0.0	0.0	0.0
Lead	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SOx	0.4	0.3	0.3	0.4	0.4	0.4	0.3	0.3	0.4	0.4	0.0	0.0	0.0	0.0	0.0
Fuel Consumption (000 gallons)															
Gasoline	2,778.6	3,109.5	3,483.2	3,851.0	4,174.7	2,779.3	3,111.6	3,485.6	3,853.1	4,176.6	0.7	2.1	2.4	2.1	1.8
Diesel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 17B
Sacramento Valley AB Diesel Inventory Effects

Tons per day	Baseline Diesel 2000	2005	2010	2015	2020	Modified Diesel 2000	2005	2010	2015	2020	Difference, modified minus baseline Diesel 2000	2005	2010	2015	2020
Vehicles	72,260	74,069	68,557	64,042	62,155	72,260	74,069	68,557	64,042	62,155	0	0	0	0	0
VMT/1000	4,506	4,604	4,361	4,239	4,303	4,506	4,604	4,361	4,239	4,303	0	0	0	0	0
Trips	783,950	820,480	792,161	762,684	751,616	783,950	820,480	792,161	762,684	751,616	0	0	0	0	0
Reactive Organic Gas Emissions															
Run Exh	2.7	2.4	1.9	1.4	1.1	2.0	1.8	1.4	1.0	0.8	-0.7	-0.6	-0.5	-0.3	-0.3
Idle Exh	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	-0.1	0.0	-0.1	0.0	-0.1
Start Ex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Ex	2.9	2.6	2.1	1.5	1.2	2.1	1.9	1.5	1.1	0.9	-0.7	-0.7	-0.5	-0.4	-0.3
Diurnal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hot Soak	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Running	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Resting	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	2.9	2.6	2.1	1.5	1.2	2.1	1.9	1.5	1.1	0.9	-0.7	-0.7	-0.5	-0.4	-0.3
Carbon Monoxide Emissions															
Run Exh	12.5	10.6	8.6	6.8	5.8	12.5	10.6	8.6	6.8	5.8	0.0	0.0	0.0	0.0	0.0
Idle Exh	0.8	0.9	0.9	0.9	1.0	0.8	0.9	0.9	0.9	1.0	0.0	0.0	0.0	0.0	0.0
Start Ex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Ex	13.3	11.5	9.5	7.7	6.8	13.3	11.5	9.5	7.7	6.8	0.0	0.0	0.0	0.0	0.0
Oxides of Nitrogen Emissions															
Run Exh	64.1	54.8	39.0	23.8	14.6	67.3	57.9	41.3	25.2	15.4	3.2	3.1	2.3	1.4	0.8
Idle Exh	2.5	2.7	2.8	2.9	3.0	2.4	2.5	2.6	2.7	2.8	-0.2	-0.2	-0.2	-0.2	-0.2
Start Ex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Ex	66.6	57.5	41.8	26.7	17.6	69.6	60.4	43.9	27.9	18.2	3.0	2.9	2.1	1.2	0.6
Carbon Dioxide Emissions (000)															
Run Exh	7.6	8.0	8.0	8.2	8.7	7.6	8.0	8.0	8.2	8.7	0.0	0.0	0.0	0.0	0.0
Idle Exh	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.2	0.2	0.0	0.0	0.0	0.0	0.0
Start Ex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Ex	7.7	8.1	8.2	8.4	8.8	7.7	8.1	8.2	8.4	8.8	0.0	0.0	0.0	0.0	0.0
PM10 Emissions															
Run Exh	1.6	1.3	0.9	0.6	0.5	1.5	1.2	0.8	0.6	0.4	-0.1	-0.1	-0.1	-0.1	-0.1
Idle Exh	0.1	0.1	0.1	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Start Ex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Ex	1.7	1.3	1.0	0.7	0.6	1.6	1.2	0.9	0.6	0.5	-0.1	-0.1	-0.1	-0.1	-0.1
TireWear	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
BrakeWr	0.1	0.1	0.0	0.0	0.1	0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0
Total	1.9	1.5	1.2	0.9	0.7	1.8	1.4	1.1	0.8	0.6	-0.1	-0.1	-0.1	-0.1	-0.1
Lead	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SOx	0.7	0.7	0.1	0.1	0.1	0.7	0.7	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Fuel Consumption (000 gallons)															
Gasoline	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diesel	690.7	729.4	737.1	754.4	794.3	690.7	729.4	737.1	754.4	794.3	0.0	0.0	0.0	0.0	0.0

Table 18A
San Diego County Gasoline Inventory Effects

Tons per day	Baseline Gasoline 2000	2005	2010	2015	2020	Modified Gasoline 2000	2005	2010	2015	2020	Difference, modified minus baseline Gasoline 2000	2005	2010	2015	2020
Vehicles	1,846,248	2,105,298	2,277,811	2,472,344	2,610,248	1,846,248	2,105,298	2,277,811	2,472,344	2,610,248	0	0	0	0	0
VMT/1000	70,306	78,479	83,033	89,200	92,819	70,306	78,479	83,033	89,200	92,819	0	0	0	0	0
Trips	11,966,641	13,522,465	14,531,009	15,675,878	16,439,085	11,966,641	13,522,465	14,530,999	15,675,878	16,439,085	0	0	-10	0	0
Reactive Organic Gas Emissions															
Run Exh	34.3	19.6	12.0	7.9	5.8	34.3	20.0	12.5	8.3	6.2	0.0	0.4	0.5	0.4	0.4
Idle Exh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Start Ex	17.7	12.7	8.9	6.1	4.3	18.0	13.1	9.4	6.5	4.5	0.2	0.4	0.5	0.4	0.3
Total Ex	52.0	32.3	21.0	14.0	10.1	52.3	33.1	21.9	14.8	10.8	0.2	0.8	0.9	0.8	0.7
Diurnal	4.1	3.5	2.9	2.5	2.2	4.1	3.5	2.9	2.5	2.2	0.0	0.0	0.0	0.0	0.0
Hot Soak	3.7	2.6	2.2	1.9	1.7	3.7	2.6	2.2	1.9	1.7	0.0	0.0	0.0	0.0	0.0
Running	20.9	14.8	11.6	9.5	8.4	20.9	14.8	11.6	9.5	8.4	0.0	0.0	0.0	0.0	0.0
Resting	2.3	1.9	1.7	1.7	1.6	2.3	1.9	1.7	1.7	1.6	0.0	0.0	0.0	0.0	0.0
Total	83.0	55.1	39.4	29.6	23.9	83.2	55.9	40.4	30.4	24.6	0.2	0.8	1.0	0.8	0.7
Carbon Monoxide Emissions															
Run Exh	726.7	475.9	324.0	222.2	162.1	731.8	489.4	338.7	234.8	172.3	5.1	13.5	14.7	12.6	10.2
Idle Exh	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0
Start Ex	176.9	127.0	94.4	68.4	50.1	178.5	130.7	98.8	72.2	53.1	1.6	3.7	4.4	3.9	3.0
Total Ex	903.8	603.1	418.6	290.8	212.4	910.5	620.4	437.7	307.3	225.6	6.7	17.2	19.1	16.5	13.2
Oxides of Nitrogen Emissions															
Run Exh	79.9	48.7	32.0	21.6	15.7	81.0	50.2	33.5	22.8	16.6	1.1	1.5	1.5	1.2	0.9
Idle Exh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Start Ex	12.0	10.3	8.7	6.7	5.0	12.3	10.9	9.3	7.2	5.5	0.3	0.6	0.6	0.5	0.5
Total Ex	91.9	59.0	40.7	28.3	20.8	93.3	61.1	42.8	30.0	22.1	1.4	2.1	2.1	1.7	1.4
Carbon Dioxide Emissions (000)															
Run Exh	35.6	39.2	41.0	43.7	45.3	35.6	39.2	41.0	43.7	45.3	0.0	0.0	0.0	0.0	0.0
Idle Exh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Start Ex	1.1	1.2	1.3	1.3	1.4	1.1	1.2	1.3	1.3	1.4	0.0	0.0	0.0	0.0	0.0
Total Ex	36.8	40.4	42.3	45.0	46.8	36.8	40.4	42.3	45.0	46.8	0.0	0.0	0.0	0.0	0.0
PM10 Emissions															
Run Exh	1.0	1.3	1.4	1.6	1.7	1.0	1.3	1.4	1.6	1.7	0.0	0.0	0.0	0.0	0.0
Idle Exh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Start Ex	0.1	0.1	0.2	0.2	0.2	0.1	0.1	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0
Total Ex	1.1	1.4	1.6	1.7	1.9	1.1	1.4	1.6	1.7	1.9	0.0	0.0	0.0	0.0	0.0
TireWear	0.6	0.7	0.7	0.8	0.8	0.6	0.7	0.7	0.8	0.8	0.0	0.0	0.0	0.0	0.0
BrakeWr	1.0	1.1	1.1	1.2	1.3	1.0	1.1	1.1	1.2	1.3	0.0	0.0	0.0	0.0	0.0
Total	2.8	3.2	3.5	3.8	4.0	2.8	3.2	3.5	3.8	4.0	0.0	0.0	0.0	0.0	0.0
Lead	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SOx	0.5	0.4	0.4	0.4	0.5	0.5	0.4	0.4	0.4	0.5	0.0	0.0	0.0	0.0	0.0
Fuel Consumption (000 gallons)															
Gasoline	3,928.2	4,244.5	4,407.8	4,663.6	4,826.1	3,929.3	4,247.6	4,411.2	4,666.6	4,828.5	1.1	3.1	3.4	3.0	2.4
Diesel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 18B
San Diego County Diesel Inventory Effects

Tons per day	Baseline Diesel 2000	2005	2010	2015	2020	Modified Diesel 2000	2005	2010	2015	2020	Difference, modified minus baseline Diesel 2000	2005	2010	2015	2020
Vehicles	49,282	55,370	54,695	55,008	54,700	49,282	55,370	54,695	55,008	54,700	0	0	0	0	0
VMT/1000	3,435	4,009	4,273	4,504	4,535	3,435	4,009	4,273	4,504	4,535	0	0	0	0	0
Trips	511,827	604,204	629,266	661,065	680,780	511,827	604,204	629,266	661,065	680,780	0	0	0	0	0
Reactive Organic Gas Emissions															
Run Exh	2.3	2.3	1.9	1.5	1.2	1.7	1.7	1.4	1.1	0.9	-0.6	-0.6	-0.5	-0.4	-0.3
Idle Exh	0.1	0.1	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.0	0.0	-0.1	-0.1	-0.1
Start Ex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Ex	2.4	2.4	2.0	1.7	1.4	1.8	1.8	1.5	1.2	1.0	-0.6	-0.6	-0.5	-0.4	-0.4
Diurnal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hot Soak	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Running	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Resting	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	2.4	2.4	2.0	1.7	1.4	1.8	1.8	1.5	1.2	1.0	-0.6	-0.6	-0.5	-0.4	-0.4
Carbon Monoxide Emissions															
Run Exh	10.6	9.9	8.5	7.3	6.6	10.6	9.9	8.5	7.3	6.6	0.0	0.0	0.0	0.0	0.0
Idle Exh	0.6	0.7	0.8	0.9	1.0	0.6	0.7	0.8	0.9	1.0	0.0	0.0	0.0	0.0	0.0
Start Ex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Ex	11.2	10.7	9.3	8.2	7.6	11.2	10.7	9.3	8.2	7.6	0.0	0.0	0.0	0.0	0.0
Oxides of Nitrogen Emissions															
Run Exh	50.5	48.6	37.1	24.4	16.5	52.8	51.3	39.3	25.8	17.4	2.4	2.7	2.1	1.4	0.9
Idle Exh	1.9	2.3	2.5	2.8	3.0	1.8	2.1	2.4	2.6	2.8	-0.1	-0.1	-0.2	-0.2	-0.2
Start Ex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Ex	52.4	50.9	39.6	27.2	19.5	54.6	53.4	41.6	28.4	20.2	2.2	2.5	2.0	1.2	0.7
Carbon Dioxide Emissions (000)															
Run Exh	6.0	7.0	8.1	8.9	9.2	6.0	7.0	8.1	8.9	9.2	0.0	0.0	0.0	0.0	0.0
Idle Exh	0.1	0.1	0.1	0.1	0.2	0.1	0.1	0.1	0.1	0.2	0.0	0.0	0.0	0.0	0.0
Start Ex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Ex	6.1	7.2	8.2	9.1	9.4	6.1	7.2	8.2	9.1	9.4	0.0	0.0	0.0	0.0	0.0
PM10 Emissions															
Run Exh	1.3	1.2	0.9	0.7	0.6	1.2	1.1	0.8	0.6	0.5	-0.1	-0.1	-0.1	-0.1	-0.1
Idle Exh	0.1	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Start Ex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Ex	1.4	1.2	0.9	0.7	0.6	1.3	1.1	0.8	0.6	0.5	-0.1	-0.1	-0.1	-0.1	-0.1
TireWear	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
BrakeWr	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Total	1.5	1.4	1.1	0.9	0.8	1.4	1.3	1.0	0.8	0.7	-0.1	-0.1	-0.1	-0.1	-0.1
Lead	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SOx	0.5	0.6	0.1	0.1	0.1	0.5	0.6	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Fuel Consumption (000 gallons)															
Gasoline	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diesel	545.1	644.9	740.6	816.5	842.4	545.1	644.9	740.6	816.5	842.4	0.0	0.0	0.0	0.0	0.0

Table 19A
San Francisco Bay AB Gasoline Inventory Effects

Tons per day	Baseline Gasoline 2000	2005	2010	2015	2020	Modified Gasoline 2000	2005	2010	2015	2020	Difference, modified minus baseline Gasoline 2000	2005	2010	2015	2020
Vehicles	4,449,118	4,909,217	5,568,773	5,958,341	6,396,387	4,449,118	4,909,218	5,568,773	5,958,341	6,396,387	0	1	0	0	0
VMT/1000	149,900	162,388	182,625	191,747	203,522	149,900	162,388	182,625	191,747	203,522	0	0	0	0	0
Trips	28,786,203	31,597,704	35,559,084	37,670,576	40,018,472	28,786,203	31,597,704	35,559,084	37,670,576	40,018,472	0	0	0	0	0
Reactive Organic Gas Emissions															
Run Exh	66.3	45.3	32.3	20.0	12.7	66.4	46.0	33.2	20.8	13.4	0.1	0.7	0.9	0.8	0.7
Idle Exh	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Start Ex	43.1	34.1	24.1	15.5	10.1	43.5	35.2	25.3	16.5	10.8	0.4	1.1	1.2	1.0	0.7
Total Ex	109.5	79.5	56.5	35.6	22.9	110.0	81.2	58.6	37.4	24.2	0.6	1.7	2.1	1.8	1.4
Diurnal	9.1	7.7	6.5	5.4	4.7	9.1	7.7	6.5	5.4	4.7	0.0	0.0	0.0	0.0	0.0
Hot Soak	9.2	6.4	5.3	4.5	3.9	9.2	6.4	5.3	4.5	3.9	0.0	0.0	0.0	0.0	0.0
Running	53.8	37.5	29.1	23.3	20.0	53.8	37.5	29.1	23.3	20.0	0.0	0.0	0.0	0.0	0.0
Resting	5.2	4.2	4.0	3.8	3.6	5.2	4.2	4.0	3.8	3.6	0.0	0.0	0.0	0.0	0.0
Total	186.7	135.3	101.2	72.6	55.1	187.3	137.0	103.4	74.4	56.5	0.5	1.7	2.1	1.8	1.4
Carbon Monoxide Emissions															
Run Exh	1,435.7	1,030.1	756.8	508.5	351.6	1,447.2	1,056.3	788.0	535.6	373.4	11.5	26.3	31.2	27.1	21.8
Idle Exh	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.0	0.0	0.0	0.0	0.0
Start Ex	434.1	340.1	253.0	175.1	121.1	438.0	348.8	263.6	184.5	128.4	3.9	8.7	10.6	9.4	7.3
Total Ex	1,870.3	1,370.7	1,010.3	684.1	473.1	1,885.7	1,405.6	1,052.1	720.6	502.3	15.5	35.0	41.9	36.5	29.2
Oxides of Nitrogen Emissions															
Run Exh	163.9	115.6	81.6	53.8	37.0	166.4	119.1	85.2	56.8	39.3	2.5	3.5	3.6	3.0	2.3
Idle Exh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Start Ex	28.0	26.2	23.0	17.4	12.6	28.7	27.5	24.6	18.8	13.7	0.7	1.3	1.6	1.4	1.1
Total Ex	191.9	141.8	104.6	71.2	49.6	195.2	146.5	109.8	75.6	53.0	3.3	4.8	5.3	4.4	3.4
Carbon Dioxide Emissions (000)															
Run Exh	72.5	77.4	93.8	100.0	106.1	72.5	77.4	93.8	100.0	106.1	0.0	0.0	0.0	0.0	0.0
Idle Exh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Start Ex	2.8	2.9	3.2	3.3	3.5	2.8	2.9	3.2	3.3	3.5	0.0	0.0	0.0	0.0	0.0
Total Ex	75.3	80.3	97.0	103.4	109.6	75.3	80.3	97.0	103.4	109.6	0.0	0.0	0.0	0.0	0.0
PM10 Emissions															
Run Exh	1.9	2.3	3.1	3.6	4.0	1.9	2.3	3.1	3.6	4.0	0.0	0.0	0.0	0.0	0.0
Idle Exh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Start Ex	0.2	0.3	0.3	0.3	0.4	0.2	0.3	0.3	0.3	0.4	0.0	0.0	0.0	0.0	0.0
Total Ex	2.2	2.6	3.4	4.0	4.3	2.2	2.6	3.4	4.0	4.3	0.0	0.0	0.0	0.0	0.0
TireWear	1.3	1.5	1.6	1.7	1.8	1.3	1.5	1.6	1.7	1.8	0.0	0.0	0.0	0.0	0.0
BrakeWr	2.1	2.2	2.5	2.7	2.8	2.1	2.2	2.5	2.7	2.8	0.0	0.0	0.0	0.0	0.0
Total	5.6	6.2	7.6	8.3	8.9	5.6	6.2	7.6	8.3	8.9	0.0	0.0	0.0	0.0	0.0
Lead	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SOx	1.1	0.8	0.9	1.0	1.1	1.1	0.8	1.0	1.0	1.1	0.0	0.0	0.0	0.0	0.0
Fuel Consumption (000 gallons)															
Gasoline	8,051.0	8,469.8	10,115.5	10,706.4	11,304.0	8,053.8	8,476.1	10,123.0	10,712.9	11,309.2	2.8	6.3	7.5	6.6	5.2
Diesel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 19B
San Francisco Bay AB Diesel Inventory Effects

Tons per day	Baseline Diesel 2000	2005	2010	2015	2020	Modified Diesel 2000	2005	2010	2015	2020	Difference, modified minus baseline Diesel 2000	2005	2010	2015	2020
Vehicles	128,334	139,582	139,248	134,482	132,256	128,334	139,582	139,248	134,482	132,256	0	0	0	0	0
VMT/1000	8,908	9,712	10,176	9,982	9,896	8,908	9,712	10,176	9,982	9,896	0	0	0	0	0
Trips	1,472,651	1,665,480	1,739,737	1,718,187	1,705,113	1,472,651	1,665,480	1,739,737	1,718,187	1,705,113	0	0	0	0	0
Reactive Organic Gas Emissions															
Run Exh	5.8	5.6	4.7	3.6	2.8	4.2	4.1	3.5	2.6	2.1	-1.5	-1.5	-1.3	-1.0	-0.8
Idle Exh	0.2	0.3	0.3	0.3	0.3	0.2	0.2	0.2	0.2	0.2	-0.1	-0.1	-0.1	-0.1	-0.1
Start Ex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Ex	6.0	5.8	5.0	3.9	3.2	4.4	4.3	3.7	2.8	2.3	-1.6	-1.5	-1.3	-1.0	-0.8
Diurnal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hot Soak	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Running	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Resting	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	6.0	5.8	5.0	3.9	3.2	4.4	4.3	3.7	2.8	2.3	-1.6	-1.5	-1.3	-1.0	-0.8
Carbon Monoxide Emissions															
Run Exh	26.0	24.2	21.3	17.5	15.2	26.0	24.2	21.3	17.5	15.2	0.0	0.0	0.0	0.0	0.0
Idle Exh	1.4	1.6	1.8	1.9	1.9	1.4	1.6	1.8	1.9	1.9	0.0	0.0	0.0	0.0	0.0
Start Ex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Ex	27.4	25.8	23.1	19.3	17.1	27.4	25.8	23.1	19.3	17.1	0.0	0.0	0.0	0.0	0.0
Oxides of Nitrogen Emissions															
Run Exh	139.4	126.4	97.2	62.2	41.2	145.8	132.9	102.1	65.1	42.8	6.4	6.5	4.9	2.9	1.6
Idle Exh	4.3	4.9	5.5	5.7	5.9	4.0	4.6	5.1	5.3	5.5	-0.3	-0.3	-0.3	-0.4	-0.4
Start Ex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Ex	143.7	131.3	102.6	67.9	47.0	149.8	137.5	107.2	70.5	48.3	6.1	6.2	4.6	2.5	1.3
Carbon Dioxide Emissions (000)															
Run Exh	16.1	17.5	19.5	19.9	20.1	16.1	17.5	19.5	19.9	20.1	0.0	0.0	0.0	0.0	0.0
Idle Exh	0.2	0.3	0.3	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0
Start Ex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Ex	16.3	17.8	19.8	20.1	20.4	16.3	17.8	19.8	20.1	20.4	0.0	0.0	0.0	0.0	0.0
PM10 Emissions															
Run Exh	3.3	2.8	2.2	1.6	1.3	3.1	2.6	2.0	1.4	1.1	-0.2	-0.3	-0.3	-0.2	-0.2
Idle Exh	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Start Ex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Ex	3.4	2.9	2.3	1.7	1.4	3.2	2.7	2.1	1.5	1.2	-0.2	-0.3	-0.3	-0.2	-0.2
TireWear	0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0
BrakeWr	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Total	3.8	3.3	2.7	2.1	1.8	3.5	3.0	2.5	1.9	1.6	-0.2	-0.3	-0.3	-0.2	-0.2
Lead	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SOx	1.4	1.6	0.2	0.2	0.2	1.4	1.6	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0
Fuel Consumption (000 gallons)															
Gasoline	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diesel	1,464.0	1,600.7	1,782.4	1,811.6	1,839.1	1,464.0	1,600.7	1,782.4	1,811.6	1,839.1	0.0	0.0	0.0	0.0	0.0

Table 20A
San Joaquin Valley AB Gasoline Inventory Effects

Tons per day	Baseline Gasoline 2000	2005	2010	2015	2020	Modified Gasoline 2000	2005	2010	2015	2020	Difference, modified minus baseline Gasoline 2000	2005	2010	2015	2020
Vehicles	1,900,753	2,221,866	2,537,239	2,886,737	3,232,729	1,900,753	2,221,866	2,537,240	2,886,737	3,232,729	0	0	1	0	0
VMT/1000	73,711	85,843	98,613	111,991	124,262	73,711	85,843	98,613	111,991	124,262	0	0	0	0	0
Trips	12,609,895	14,572,488	16,534,736	18,708,835	20,827,516	12,609,895	14,572,488	16,534,736	18,708,835	20,827,516	0	0	0	0	0
Reactive Organic Gas Emissions															
Run Exh	43.0	24.9	15.2	9.7	6.7	42.9	25.2	15.7	10.2	7.1	-0.1	0.3	0.4	0.4	0.4
Idle Exh	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Start Ex	21.7	15.2	10.3	6.8	4.5	21.8	15.6	10.8	7.2	4.8	0.1	0.4	0.5	0.4	0.3
Total Ex	64.7	40.2	25.6	16.6	11.3	64.7	40.9	26.5	17.4	12.0	0.0	0.7	0.9	0.9	0.7
Diurnal	6.5	5.8	4.7	3.8	3.2	6.5	5.8	4.7	3.8	3.2	0.0	0.0	0.0	0.0	0.0
Hot Soak	5.9	4.3	3.5	2.9	2.6	5.9	4.3	3.5	2.9	2.6	0.0	0.0	0.0	0.0	0.0
Running	27.4	19.3	14.7	11.9	10.6	27.4	19.3	14.7	11.9	10.6	0.0	0.0	0.0	0.0	0.0
Resting	3.5	2.9	2.5	2.2	2.0	3.5	2.9	2.5	2.2	2.0	0.0	0.0	0.0	0.0	0.0
Total	108.0	72.4	50.9	37.5	29.6	108.0	73.1	51.9	38.3	30.4	0.0	0.7	0.9	0.9	0.7
Carbon Monoxide Emissions															
Run Exh	965.5	630.4	426.7	289.6	207.0	969.1	644.3	442.8	304.3	220.0	3.6	13.9	16.2	14.8	13.0
Idle Exh	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.0	0.0	0.0	0.0	0.0
Start Ex	218.6	154.6	110.5	77.4	54.3	219.6	157.9	114.7	81.3	57.7	1.0	3.3	4.2	3.9	3.3
Total Ex	1,184.5	785.4	537.5	367.4	261.8	1,189.1	802.6	557.9	386.0	278.1	4.5	17.3	20.4	18.7	16.3
Oxides of Nitrogen Emissions															
Run Exh	93.3	57.4	37.5	25.0	17.9	94.2	58.9	39.0	26.3	19.0	0.9	1.6	1.5	1.3	1.1
Idle Exh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Start Ex	13.3	11.7	10.2	8.2	6.5	13.6	12.3	10.9	8.9	7.1	0.3	0.6	0.7	0.7	0.6
Total Ex	106.6	69.1	47.7	33.1	24.4	107.8	71.2	50.0	35.2	26.1	1.3	2.1	2.3	2.0	1.7
Carbon Dioxide Emissions (000)															
Run Exh	36.7	42.3	48.1	54.4	60.4	36.7	42.3	48.1	54.4	60.4	0.0	0.0	0.0	0.0	0.0
Idle Exh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Start Ex	1.3	1.3	1.5	1.6	1.8	1.3	1.3	1.5	1.6	1.8	0.0	0.0	0.0	0.0	0.0
Total Ex	38.0	43.7	49.6	56.0	62.2	38.0	43.7	49.6	56.0	62.2	0.0	0.0	0.0	0.0	0.0
PM10 Emissions															
Run Exh	1.1	1.3	1.5	1.7	2.0	1.1	1.3	1.5	1.7	2.0	0.0	0.0	0.0	0.0	0.0
Idle Exh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Start Ex	0.1	0.2	0.2	0.2	0.2	0.1	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0
Total Ex	1.2	1.5	1.7	1.9	2.2	1.2	1.5	1.7	1.9	2.2	0.0	0.0	0.0	0.0	0.0
TireWear	0.6	0.8	0.9	1.0	1.1	0.6	0.8	0.9	1.0	1.1	0.0	0.0	0.0	0.0	0.0
BrakeWr	1.0	1.2	1.3	1.6	1.7	1.0	1.2	1.3	1.6	1.7	0.0	0.0	0.0	0.0	0.0
Total	2.9	3.4	3.9	4.5	5.0	2.9	3.4	3.9	4.5	5.0	0.0	0.0	0.0	0.0	0.0
Lead	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SOx	0.5	0.4	0.5	0.5	0.6	0.5	0.4	0.5	0.5	0.6	0.0	0.0	0.0	0.0	0.0
Fuel Consumption (000 gallons)															
Gasoline	4,100.6	4,610.6	5,178.7	5,801.3	6,419.1	4,101.4	4,613.7	5,182.3	5,804.7	6,422.0	0.8	3.1	3.6	3.4	2.9
Diesel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 20B
San Joaquin Valley AB Diesel Inventory Effects

Tons per day	Baseline Diesel 2000	2005	2010	2015	2020	Modified Diesel 2000	2005	2010	2015	2020	Difference, modified minus baseline Diesel 2000	2005	2010	2015	2020
Vehicles	85,276	96,368	98,884	103,419	109,250	85,276	96,368	98,884	103,419	109,250	0	0	0	0	0
VMT/1000	7,066	8,045	8,764	9,861	10,887	7,066	8,045	8,764	9,861	10,887	0	0	0	0	0
Trips	922,150	1,099,472	1,194,257	1,303,510	1,417,240	922,150	1,099,472	1,194,257	1,303,510	1,417,240	0	0	0	0	0
Reactive Organic Gas Emissions															
Run Exh	5.2	5.1	4.3	3.3	2.7	3.8	3.8	3.2	2.5	2.0	-1.3	-1.3	-1.1	-0.9	-0.7
Idle Exh	0.2	0.3	0.3	0.3	0.4	0.2	0.2	0.2	0.2	0.3	-0.1	-0.1	-0.1	-0.1	-0.1
Start Ex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Ex	5.4	5.4	4.6	3.6	3.1	4.0	4.0	3.4	2.7	2.3	-1.4	-1.4	-1.2	-0.9	-0.8
Diurnal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hot Soak	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Running	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Resting	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	5.4	5.4	4.6	3.6	3.1	4.0	4.0	3.4	2.7	2.3	-1.4	-1.4	-1.2	-0.9	-0.8
Carbon Monoxide Emissions															
Run Exh	23.3	22.0	19.1	16.3	15.3	23.3	22.0	19.1	16.3	15.3	0.0	0.0	0.0	0.0	0.0
Idle Exh	1.3	1.5	1.7	2.0	2.2	1.3	1.5	1.7	2.0	2.2	0.0	0.0	0.0	0.0	0.0
Start Ex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Ex	24.6	23.5	20.9	18.2	17.4	24.6	23.5	20.9	18.2	17.4	0.0	0.0	0.0	0.0	0.0
Oxides of Nitrogen Emissions															
Run Exh	110.8	104.6	79.6	49.9	31.5	116.3	110.5	84.4	52.9	33.3	5.6	6.0	4.8	3.0	1.8
Idle Exh	4.0	4.7	5.3	6.0	6.6	3.7	4.4	5.0	5.6	6.2	-0.3	-0.3	-0.3	-0.4	-0.4
Start Ex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Ex	114.7	109.2	84.9	55.9	38.1	120.0	114.9	89.3	58.4	39.5	5.3	5.7	4.4	2.6	1.4
Carbon Dioxide Emissions (000)															
Run Exh	12.8	14.8	17.1	20.0	22.5	12.8	14.8	17.1	20.0	22.5	0.0	0.0	0.0	0.0	0.0
Idle Exh	0.2	0.2	0.3	0.3	0.3	0.2	0.2	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0
Start Ex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Ex	13.0	15.1	17.3	20.3	22.8	13.0	15.1	17.3	20.3	22.8	0.0	0.0	0.0	0.0	0.0
PM10 Emissions															
Run Exh	2.8	2.4	1.9	1.4	1.2	2.6	2.2	1.7	1.2	1.0	-0.2	-0.2	-0.2	-0.2	-0.2
Idle Exh	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Start Ex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Ex	2.9	2.5	2.0	1.5	1.3	2.7	2.3	1.7	1.3	1.0	-0.2	-0.2	-0.3	-0.2	-0.2
TireWear	0.2	0.2	0.2	0.3	0.3	0.2	0.2	0.2	0.3	0.3	0.0	0.0	0.0	0.0	0.0
BrakeWr	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0	0.0
Total	3.2	2.9	2.3	1.9	1.7	3.0	2.6	2.1	1.7	1.5	-0.2	-0.3	-0.2	-0.2	-0.2
Lead	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SOx	1.2	1.3	0.2	0.2	0.2	1.2	1.3	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0
Fuel Consumption (000 gallons)															
Gasoline	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diesel	1,167.8	1,357.1	1,560.3	1,823.7	2,054.1	1,167.8	1,357.1	1,560.3	1,823.7	2,054.1	0.0	0.0	0.0	0.0	0.0

Table 21A
South Coast AB Gasoline Inventory Effects

Tons per day	Baseline Gasoline 2000	2005	2010	2015	2020	Modified Gasoline 2000	2005	2010	2015	2020	Difference, modified minus baseline Gasoline 2000	2005	2010	2015	2020
Vehicles	8,716,955	9,390,666	10,123,658	10,855,280	11,640,354	8,716,955	9,390,666	10,123,658	10,855,280	11,640,354	0	0	0	0	0
VMT/1000	300,754	318,107	338,507	359,449	383,624	300,754	318,107	338,507	359,449	383,624	0	0	0	0	0
Trips	57,020,664	60,771,087	64,989,893	69,166,575	73,733,600	57,020,664	60,771,087	64,989,893	69,166,574	73,733,600	0	0	0	-1	0
Reactive Organic Gas Emissions															
Run Exh	143.9	78.9	47.7	31.4	21.3	143.5	80.0	49.3	32.9	22.7	-0.4	1.1	1.6	1.5	1.4
Idle Exh	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.0	0.0	0.0	0.0	0.0
Start Ex	81.3	55.3	37.8	24.9	16.6	82.1	57.1	39.8	26.6	17.9	0.8	1.8	2.0	1.7	1.2
Total Ex	225.4	134.4	85.7	56.4	38.1	225.8	137.3	89.2	59.6	40.7	0.4	2.9	3.6	3.2	2.6
Diurnal	21.2	17.7	14.7	12.3	10.6	21.2	17.7	14.7	12.3	10.6	0.0	0.0	0.0	0.0	0.0
Hot Soak	19.8	14.0	11.5	9.9	8.6	19.8	14.0	11.5	9.9	8.6	0.0	0.0	0.0	0.0	0.0
Running	104.7	72.9	56.2	45.8	39.4	104.7	72.9	56.2	45.8	39.4	0.0	0.0	0.0	0.0	0.0
Resting	11.9	9.6	8.7	8.3	7.8	11.9	9.6	8.7	8.3	7.8	0.0	0.0	0.0	0.0	0.0
Total	383.1	248.6	176.8	132.7	104.4	383.5	251.5	180.4	135.9	107.0	0.4	2.9	3.6	3.2	2.6
Carbon Monoxide Emissions															
Run Exh	3,162.3	1,976.8	1,355.1	956.5	686.4	3,179.5	2,027.2	1,413.0	1,009.1	729.4	17.2	50.3	57.9	52.5	43.0
Idle Exh	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0	0.0	0.0	0.0	0.0
Start Ex	822.4	555.7	399.8	279.8	197.0	829.0	570.8	417.7	295.7	209.4	6.6	15.1	17.9	15.9	12.4
Total Ex	3,985.8	2,533.6	1,755.9	1,237.3	884.4	4,009.6	2,599.0	1,831.7	1,305.8	939.8	23.8	65.4	75.8	68.5	55.4
Oxides of Nitrogen Emissions															
Run Exh	330.6	193.5	126.4	84.5	59.8	334.7	199.2	132.1	89.2	63.4	4.1	5.7	5.6	4.7	3.7
Idle Exh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Start Ex	55.9	45.4	37.5	28.3	20.9	57.3	47.7	40.0	30.5	22.8	1.3	2.2	2.6	2.3	1.8
Total Ex	386.6	239.0	163.9	112.8	80.7	392.0	246.9	172.1	119.7	86.2	5.4	8.0	8.2	6.9	5.5
Carbon Dioxide Emissions (000)															
Run Exh	146.8	152.7	160.8	173.7	184.4	146.8	152.7	160.8	173.7	184.4	0.0	0.0	0.0	0.0	0.0
Idle Exh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Start Ex	5.5	5.5	5.7	6.0	6.3	5.5	5.5	5.7	6.0	6.3	0.0	0.0	0.0	0.0	0.0
Total Ex	152.3	158.3	166.6	179.7	190.7	152.3	158.3	166.6	179.7	190.7	0.0	0.0	0.0	0.0	0.0
PM10 Emissions															
Run Exh	4.1	4.7	5.4	6.2	6.7	4.1	4.7	5.4	6.2	6.7	0.0	0.0	0.0	0.0	0.0
Idle Exh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Start Ex	0.4	0.5	0.6	0.6	0.7	0.4	0.5	0.6	0.6	0.7	0.0	0.0	0.0	0.0	0.0
Total Ex	4.5	5.2	5.9	6.9	7.4	4.5	5.2	5.9	6.9	7.4	0.0	0.0	0.0	0.0	0.0
TireWear	2.7	2.8	3.0	3.2	3.4	2.7	2.8	3.0	3.2	3.4	0.0	0.0	0.0	0.0	0.0
BrakeWr	4.2	4.4	4.7	5.0	5.3	4.2	4.4	4.7	5.0	5.3	0.0	0.0	0.0	0.0	0.0
Total	11.3	12.4	13.6	15.0	16.1	11.3	12.4	13.6	15.0	16.1	0.0	0.0	0.0	0.0	0.0
Lead	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SOx	2.0	1.5	1.6	1.7	1.9	2.0	1.5	1.6	1.8	1.9	0.0	0.0	0.0	0.0	0.0
Fuel Consumption (000 gallons)															
Gasoline	16,308.2	16,654.6	17,370.5	18,615.8	19,682.3	16,312.3	16,666.3	17,384.1	18,628.0	19,692.2	4.1	11.6	13.6	12.2	9.9
Diesel	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Table 21B
South Coast AB Diesel Inventory Effects

Tons per day	Baseline Diesel 2000	2005	2010	2015	2020	Modified Diesel 2000	2005	2010	2015	2020	Difference, modified minus baseline Diesel 2000	2005	2010	2015	2020
Vehicles	232,958	259,797	262,848	267,737	274,335	232,958	259,797	262,848	267,737	274,335	0	0	0	0	0
VMT/1000	16,208	18,077	19,523	21,008	21,999	16,208	18,077	19,523	21,008	21,999	0	0	0	0	0
Trips	2,750,596	3,150,864	3,342,043	3,530,702	3,735,772	2,750,596	3,150,863	3,342,043	3,530,702	3,735,772	0	-1	0	0	0
Reactive Organic Gas Emissions															
Run Exh	9.5	8.8	7.2	5.7	4.7	7.1	6.5	5.3	4.2	3.5	-2.5	-2.3	-1.9	-1.5	-1.2
Idle Exh	0.6	0.6	0.7	0.8	0.8	0.4	0.5	0.5	0.6	0.6	-0.2	-0.2	-0.2	-0.2	-0.2
Start Ex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Ex	10.1	9.4	7.9	6.5	5.5	7.5	7.0	5.9	4.8	4.1	-2.6	-2.4	-2.1	-1.7	-1.4
Diurnal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Hot Soak	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Running	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Resting	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total	10.1	9.4	7.9	6.5	5.5	7.5	7.0	5.9	4.8	4.1	-2.6	-2.4	-2.1	-1.7	-1.4
Carbon Monoxide Emissions															
Run Exh	45.5	40.3	34.0	29.0	26.2	45.5	40.3	34.0	29.0	26.2	0.0	0.0	0.0	0.0	0.0
Idle Exh	3.3	3.7	4.2	4.6	5.0	3.3	3.7	4.2	4.6	5.0	0.0	0.0	0.0	0.0	0.0
Start Ex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Ex	48.8	44.1	38.2	33.6	31.2	48.8	44.1	38.2	33.6	31.2	0.0	0.0	0.0	0.0	0.0
Oxides of Nitrogen Emissions															
Run Exh	281.1	250.8	188.3	114.9	72.5	294.8	264.8	199.2	121.3	76.3	13.7	14.0	10.9	6.4	3.8
Idle Exh	10.1	11.4	12.8	14.1	15.4	9.4	10.7	12.0	13.2	14.4	-0.6	-0.7	-0.8	-0.9	-1.0
Start Ex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Ex	291.2	262.2	201.1	129.0	87.9	304.2	275.4	211.1	134.5	90.7	13.0	13.2	10.0	5.5	2.8
Carbon Dioxide Emissions (000)															
Run Exh	30.0	33.3	38.0	42.4	45.2	30.0	33.3	38.0	42.4	45.2	0.0	0.0	0.0	0.0	0.0
Idle Exh	0.5	0.6	0.6	0.7	0.8	0.5	0.6	0.6	0.7	0.8	0.0	0.0	0.0	0.0	0.0
Start Ex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Ex	30.5	33.8	38.6	43.2	46.0	30.5	33.8	38.6	43.2	46.0	0.0	0.0	0.0	0.0	0.0
PM10 Emissions															
Run Exh	5.7	4.8	3.6	2.8	2.2	5.4	4.4	3.2	2.4	1.9	-0.3	-0.4	-0.4	-0.4	-0.3
Idle Exh	0.3	0.3	0.2	0.2	0.2	0.3	0.2	0.2	0.2	0.2	-0.1	-0.1	-0.1	-0.1	0.0
Start Ex	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Ex	6.0	5.1	3.8	3.0	2.4	5.7	4.6	3.4	2.6	2.1	-0.4	-0.5	-0.4	-0.4	-0.3
TireWear	0.4	0.5	0.5	0.6	0.6	0.4	0.5	0.5	0.6	0.6	0.0	0.0	0.0	0.0	0.0
BrakeWr	0.2	0.3	0.3	0.3	0.3	0.2	0.3	0.3	0.3	0.3	0.0	0.0	0.0	0.0	0.0
Total	6.7	5.8	4.6	3.9	3.4	6.3	5.3	4.2	3.5	3.0	-0.4	-0.5	-0.4	-0.4	-0.4
Lead	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SOx	2.5	2.8	0.4	0.4	0.4	2.5	2.8	0.4	0.4	0.4	0.0	0.0	0.0	0.0	0.0
Fuel Consumption (000 gallons)															
Gasoline	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Diesel	2,744.6	3,044.8	3,478.0	3,883.8	4,140.3	2,744.6	3,044.8	3,478.0	3,883.8	4,140.3	0.0	0.0	0.0	0.0	0.0